

AMENDMENTS TO CLAIMS

The following listing of claims will replace all prior versions, and listings, of claims in the application.

1 1-22 (Cancelled).

2 23. (New) A method comprising performing a machine-executed operation involving
3 instructions, wherein the machine-executed operation is at least one of:

4 A) sending said instructions over transmission media;

5 B) receiving said instructions over transmission media;

6 C) storing said instructions onto a machine-readable storage medium; and

7 D) executing the instructions;

8 wherein said instructions are instructions which, when executed by one or more

9 processors, cause the performance of a frequent itemset operation by

10 performing the steps of:

11 dynamically selecting which occurrence counting technique to use from a

12 plurality of available occurrence counting techniques by performing

13 the steps of:

14 generating cost estimates for each of the plurality of available

15 occurrence counting techniques based on an estimated I/O cost

16 of using the available occurrence counting technique, and

17 selecting the occurrence counting technique that has the lowest

18 estimated cost; and

19 during said frequent itemset operation, using said selected occurrence

20 counting technique to count occurrences of at least one combination to

21 determine whether said at least one combination satisfies frequency

22 criteria associated with said frequent itemset operation.

1 24. (New) The method of Claim 23, wherein the selected occurrence counting technique
2 is a prefix tree technique.

- 1 25. (New) The method of Claim 23, wherein generating cost estimates for each of the
2 plurality of available occurrence counting techniques based on an estimated I/O cost
3 comprises:
4 generating an I/O cost estimate for a prefix tree technique based, at least in part, on a
5 size of the candidate prefix tree and an amount of memory that can be used to
6 store the candidate prefix tree.
- 1 26. (New) The method of Claim 23, wherein the selected occurrence counting technique
2 is a bitmap intersection technique.
- 1 27. (New) The method of Claim 23, wherein generating cost estimates for each of the
2 plurality of available occurrence counting techniques based on an estimated I/O cost
3 comprises:
4 generating an I/O cost estimate for a bitmap intersection technique based, at least in
5 part, on a cost of reading bitmaps for each frequent item.
- 1 28. (New) The method of Claim 23, wherein the plurality of available occurrence
2 counting techniques include a bitmap intersection technique and a prefix tree
3 technique.
- 1 29. (New) The method of Claim 23, wherein execution of said instructions by said one or
2 more processors further causes:
3 determining that a particular occurrence counting technique will not be considered
4 during any phase of the frequent itemset operation; and
5 performing the frequent itemset operation without performing startup operations for
6 said particular occurrence counting technique.
- 1 30. (New) A method comprising performing a machine-executed operation involving
2 instructions, wherein the machine-executed operation is at least one of:
3 A) sending said instructions over transmission media;
4 B) receiving said instructions over transmission media;
5 C) storing said instructions onto a machine-readable storage medium; and
6 D) executing the instructions;

7 wherein said instructions are instructions which, when executed by one or more
8 processors, cause the performance of a frequent itemset operation by
9 performing the steps of:
10 dynamically selecting which occurrence counting technique to use from a
11 plurality of available occurrence counting techniques by performing
12 the steps of:
13 generating cost estimates for each of the plurality of available
14 occurrence counting techniques based on an estimated CPU
15 cost of using the available occurrence counting technique, and
16 selecting the occurrence counting technique that has the lowest
17 estimated cost; and
18 during said frequent itemset operation, using said selected occurrence
19 counting technique to count occurrences of at least one combination to
20 determine whether said at least one combination satisfies frequency
21 criteria associated with said frequent itemset operation.

1 31. (New) The method of Claim 30, wherein the selected occurrence counting technique
2 is a prefix tree technique.

1 32. (New) The method of Claim 30, wherein generating cost estimates for each of the
2 plurality of available occurrence counting techniques based on an estimated CPU cost
3 comprises:
4 generating a CPU cost estimate for a prefix tree technique based, at least in part, on a
5 cost for creating a prefix tree and a total number of item groups.

1 33. (New) The method of Claim 30, wherein generating cost estimates for each of the
2 plurality of available occurrence counting techniques based on an estimated CPU cost
3 comprises:
4 generating a CPU cost estimate for a bitmap intersection technique.

1 34. (New) The method of Claim 30, wherein generating cost estimates for each of the
2 plurality of available occurrence counting techniques based on an estimated CPU cost
3 comprises:

generating a CPU cost estimate for a bitmap intersection technique based, at least in part, on a number of candidate item groups and an intersection cost for two bitmaps.

35. (New) The method of Claim 30, wherein the plurality of available occurrence counting techniques include a bitmap intersection technique and a prefix tree technique.

36. (New) The method of Claim 30, wherein execution of said instructions by said one or more processors further causes:
determining that a particular occurrence counting technique will not be considered during any phase of the frequent itemset operation; and
performing the frequent itemset operation without performing startup operations for said particular occurrence counting technique.

37. (New) A method comprising performing a machine-executed operation involving instructions, wherein the machine-executed operation is at least one of:

- A) sending said instructions over transmission media;
- B) receiving said instructions over transmission media;
- C) storing said instructions onto a machine-readable storage medium; and
- D) executing the instructions;

wherein said instructions are instructions which, when executed by one or more processors, cause the performance of a frequent itemset operation by performing the steps of:

dynamically selecting which occurrence counting technique to use from a plurality of available occurrence counting techniques based on conditions existing in a computing environment in which the frequent itemset operation is to be performed,
wherein the conditions include one or more of (a) workload of a computer system executing the frequent itemset operation, and
(b) resources available on said computer system; and

17 during said frequent itemset operation, using said selected occurrence
18 counting technique to count occurrences of at least one combination to
19 determine whether said at least one combination satisfies frequency
20 criteria associated with said frequent itemset operation.

1 38. (New) The method of Claim 37, wherein:
2 said at least one phase is a phase during which combinations having N items are
3 processed;
4 a first occurrence counting technique is selected for said phase of said frequent
5 itemset operation;
6 the operation includes dynamically selecting a second occurrence counting technique
7 in the phase of a subsequent frequent itemset operation during which
8 combinations having N items are processed; and
9 the first occurrence counting technique is different from said second occurrence
10 counting technique.

1 39. (New) The method of Claim 37, wherein execution of said instructions by said one or
2 more processors further causes:
3 determining that a particular occurrence counting technique will not be considered
4 during any phase of the frequent itemset operation; and
5 performing the frequent itemset operation without performing startup operations for
6 said particular occurrence counting technique.